

**REMARKS**

The Official Action mailed December 15 2006, has been received and its contents carefully noted. This response is filed within three months of the mailing date of the Official Action and therefore is believed to be timely without extension of time. Filed concurrently herewith is a *Request for Continued Examination*. Accordingly, the Applicant respectfully submits that this response is being timely filed.

The Applicant notes with appreciation the consideration of the Information Disclosure Statements filed on June 29, 2001; December 19, 2001; April 26, 2002; July 5, 2002; July 16, 2002; September 22, 2003 (corrected April 15, 2005); February 17, 2004; March 31, 2004; October 7, 2004; September 2, 2005; and October 18, 2006.

Claims 1-17, 19-30 and 47-64 were pending in the present application prior to the above amendment. Claim 1 has been canceled without prejudice or disclaimer. Claims 2-14, 17, 19-28, 47-56 and 59-63 have been amended to better recite the features of the present invention. Accordingly, claims 2-17, 19-30 and 47-64 are now pending in the present application, of which claims 2-12, 19, 20, 47, 48 and 59 are independent. For the reasons set forth in detail below, all claims are believed to be in condition for allowance. Favorable reconsideration is requested.

Paragraph 2 of the Official Action rejects claims 1-17, 19-30 and 47-64 under the doctrine of obviousness-type double patenting over claims 1-26 of U.S. Patent No. 7,084,016 to Yamazaki. Paragraph 3 of the Official Action provisionally rejects claims 1-17, 19-30 and 47-64 under the doctrine of obviousness-type double patenting over claims 1-36 of copending application Serial No. 11/266,369 to Yamazaki. As is discussed in greater detail below, the independent claims have been amended to better recite the features of the present invention. Specifically, independent claims 2-12, 19, 20, 47, 48 and 59 have been amended to recite forming a gate insulating film over a crystallized semiconductor film after a recrystallizing step and forming an impurity region in the crystallized semiconductor film after forming the gate insulating film. The Applicant respectfully submits that the amended independent claims are patentably

distinct from the claims of the Yamazaki '016 patent and the Yamazaki '369 application. The Applicant respectfully traverses this ground for rejection and reconsideration of the pending claims is respectfully requested. In any event, the Applicant respectfully requests that the double patenting rejections be held in abeyance until an indication of allowable subject matter is made in the present application. At such time, the Applicant will respond to any remaining double patenting rejections.

Paragraphs 5-8 of the Official Action reject claims 1-17, 19-30 and 47-64 as obvious based on the combination of JP 07-038113 to Morosawa and U.S. Patent No. 5,648,276 to Hara, either alone or in combination with one or more of U.S. Patent No. 5,608,232 to Yamazaki and JP 09-186336 to Kudo. The Applicant respectfully submits that a *prima facie* case of obviousness cannot be maintained against the independent claims of the present application, as amended.

As stated in MPEP §§ 2142-2143.01, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

The prior art, either alone or in combination, does not teach or suggest all the features of the independent claims, as amended. Independent claims 2-12, 19, 20, 47, 48 and 59 have been amended to recite forming a gate insulating film over a crystallized semiconductor film after a recrystallizing step and forming an impurity region in the crystallized semiconductor film after forming the gate insulating film. For the reasons provided below, Morosawa, Hara, Yamazaki '232 and Kudo, either alone or in combination, do not teach or suggest the above-referenced features of the present invention.

The Official Action asserts that "Morosawa discloses ... forming an impurity [region] in the crystallized semiconductor film after [forming] the gate insulating film (i.e., during the S/D contact formation)" (page 45, Paper No. 20061211). The Applicant respectfully disagrees and traverses the assertions in the Official Action. Morosawa clearly discloses that "ions such as a phosphorous ion or a boron ion are implanted into the source/drain formation region 3a of the amorphous silicon thin film 3 using this photo resist film 4 as a mask to form an ion-implanted region 5" (paragraph [0008] of the English translation, submitted April 18, 2005). In Morosawa, these steps are performed before forming the gate insulating film 9. Therefore, Morosawa does not teach or suggest forming an impurity region in a crystallized semiconductor film after forming a gate insulating film.

Hara, Yamazaki '232 and Kudo do not cure the deficiencies in Morosawa. Hara appears to disclose forming a gate insulating film over a crystallized semiconductor film after a recrystallizing step (see column 8, lines 5-32, and Figures 5E and 5F). However, Hara clearly discloses "in this procedure, P atoms contained in the a-Si:H,P thin film 2 are doped into selective portions of the polycrystalline Si thin film 4 other than the portion corresponding to a channel such that a source region 5 and a drain region 6 of an n<sup>+</sup>-type, for example, are formed" (column 8, lines 11-16). Similar to Morosawa, these steps of Hara are performed before forming the gate insulating film 7. Therefore,


Morosawa and Hara do not teach or suggest forming an impurity region in a crystallized semiconductor film after forming a gate insulating film.

Yamazaki '232 is relied upon to allegedly teach furnace annealing in nitrogen and Kudo is relied upon to allegedly teach irradiation in air. However, Morosawa, Hara, Yamazaki '232 and Kudo, either alone or in combination, do not teach or suggest forming an impurity region in a crystallized semiconductor film after forming a gate insulating film.

Since Morosawa, Hara, Yamazaki '232 and Kudo do not teach or suggest all the claim limitations, a *prima facie* case of obviousness cannot be maintained. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) are in order and respectfully requested.

Should the Examiner believe that anything further would be desirable to place this application in better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

  
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